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CITY OF TORONTO
PLANNING AND DEVELOPMENT DEPARTMENT

334/085144
Policy
July 4, 1985

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Municipal Reference

To: Land Use Committee

Subject: Railway Lands Development and Future Modal Split

Origin: On April 23, 24 and 25, 1985, the Land Use Committee held public meetings with respect to the Railway Lands "Part II Plan Proposals" and "Implementation Strategy" reports (March 18, 1985) from the Commissioner of Planning and Development. As a result of these meetings the Committee requested, among other things, that the Commissioner of Planning and Development report on:

> "... possible means of inducing or regulating the modal split, with the objective of creating deliberate shifts to public transit, particularly in the high density commercial area, in order to maintain existing road capacities as the project proceeds."

Earlier, in December, 1983, when considering the Commissioner of Planning and Development's initial "Railway Lands Development Concept" report, City Council requested:

> "That the Commissioner of Planning and Development report further on ways to encourage the shift from auto to public transit, which is called for in the Central Waterfront Transportation Study."

This report is written in response to these two requests. (c71luc85292:44)

Comments:

1. Background

In preparing the "Development Concept" (Sept., 1983) report, City planning staff undertook an analysis of future long-term transportation needs for the entire Central Area, including the Railway Lands. The analysis, which was based upon a number of assumptions including modal split estimates, concluded that there is sufficient development potential permitted in the Central Area to require future increases in the capacities of both the regional transit and road systems within the next ten to twenty years if office growth continues at past rates. The forecast need for

increased road capacity was found to be particularly dependent upon future estimates of the peak-hour modal split. The study anticipated that, over the long-term, the percentage of peak-hour office employees commuting to work in the Central Area could be expected to decline from the estimated present level of 21% by auto to a future level of 16% by auto.

The reasons for expecting this long-run shift in the modal split from auto to other modes are given in earlier reports and can be briefly summarized as follows:

(i) Cordon count data for the period 1975-81 show a 5% shift from auto to transit for all peak-period Central Area trips.

(ii) Proposed transit improvements will enhance the relative attractiveness of this mode while increases in road capacity will be limited to maintaining existing levels of service for automobile commuters.

(iii) Relative costs are expected to favour transit over automobile use as parking, maintenance, fuel and other operating costs increase.

(iv) The City's current parking standards limit the growth in the supply of commuter parking spaces in the Central Area.

(v) In endorsing the Railway Lands Concept proposal, City Council adopted the policy that road improvements should not precede transit improvements to the Central Area.

To illustrate the sensitivity of the travel demand forecasts to the modal split assumptions, City planning staff estimated that projected Central Area office development levels could increase the number of peak-hour autos coming into the Central Area by around 4,000, based on an auto modal split of 16%, whereas this figure would climb to 13,000 if the estimated current auto modal split for office employees of 21% were maintained over the long term. During the public discussions of the Railway Lands proposals, concern has been expressed over the issue of increased auto commuting to the Central Area. This concern underlies the request for consideration of possible measures to provide additional assurances - over and above the impact of the five factors noted above - that a significant shift in the modal split from auto to transit can be secured and that the future need for increases in regional road capacity is minimized.

The basic purpose of this report is to review various methods by which the modal split of peak period Central Area commuters might be controlled, and to identify which, if any, appear applicable to the Toronto situation.

2. Past Trends and Future Prospects

Trends in the modal split for the two-hour morning rush (7:00-9:00 a.m.) in the Central Area over the 1975-83 period are summarized in Table 1 and illustrated in Graphs 1 and 2. From these data it can be seen that there was a 5% shift for all vehicular passengers from private auto to transit over the 1975-81 period. During this period, GO transit experienced the largest percentage increases in rush hour passengers. More detailed data for TTC passengers indicate that most of the 1975-81 peak period increases in local transit ridership were on the subway system, while certain surface transit routes experienced a decline in ridership. Based on the results of an extensive survey conducted in 1975 for the "Central Area Parking and Loading Study", 21% of current office commuters are estimated to travel to work by car in the Central Area, reflecting an above average level of peak-hour transit use by this employment sub-group.

TABLE 1

SUMMARY OF PERSON TRIPS ENTERING THE CENTRAL AREA CORDON
(7:00 - 9:00 a.m.)
FOR MAJOR MODE CATEGORIES
1975-1983

	Private Auto	TTC	GO Train	Other	Total
1975	78,706	123,628	9,456	3,536	215,326
	0.37	0.57	0.04	0.02	1.00
1977	81,169	125,870	11,807	4,682	223,528
	0.36	0.56	0.05	0.02	1.00
1979	88,598	126,282	15,446	4,942	235,268
	0.38	0.54	0.07	0.02	1.00
1981	79,289	144,872	19,441	4,358	247,960
	0.32	0.58	0.08	0.02	1.00
1983	81,153	139,647	18,520	4,500	243,820
	0.33	0.57	0.08	0.02	1.00

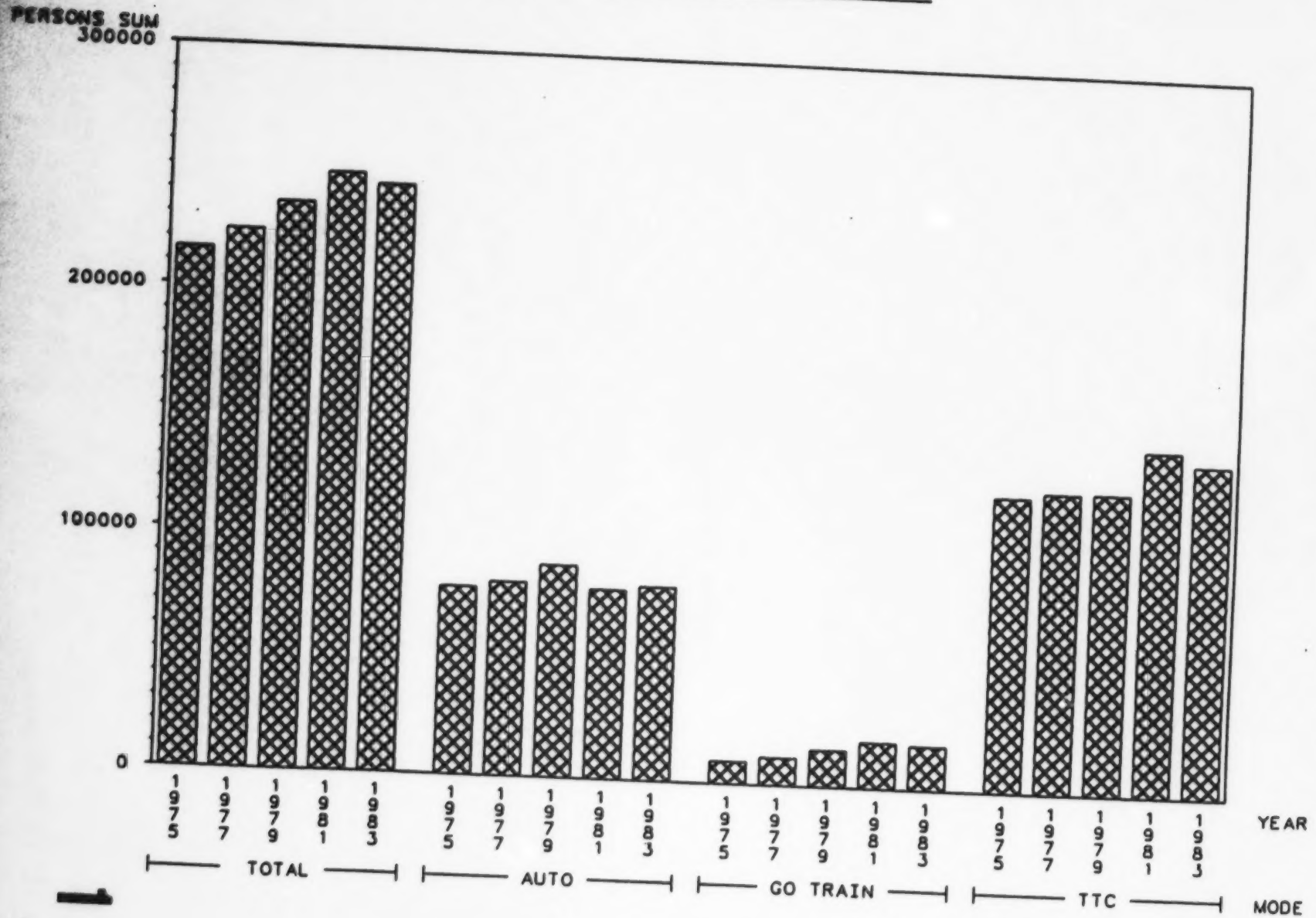
Source: City of Toronto Public Works Department

Note: The figures in the Table relate to all trips, including office employees.

The 1981-3 period shows a slight reversal in the preceding six-year trend towards increased transit use, with a small increase in the total proportion of morning peak-period trips by auto. It should be noted that this increase in the proportion of auto trips (from 32% to 33% of total trips) was associated with a slight decrease in the total number of all peak-period trips entering the Central Area, and 1983 auto person trips did not exceed the peak levels experienced in 1979. Over the 1981-3 period, Central Area employment declined and it appears that transit ridership, particularly on TTC surface routes, was most adversely affected by this drop in peak-period travel demand. However, 1981-3 represents too short a period upon which to identify a trend. The 1985 biannual cordon data will shortly be available to confirm

Person Trips Entering the Central Area Cordon by Mode

7 AM to 9 AM for the Period 1975 to 1983



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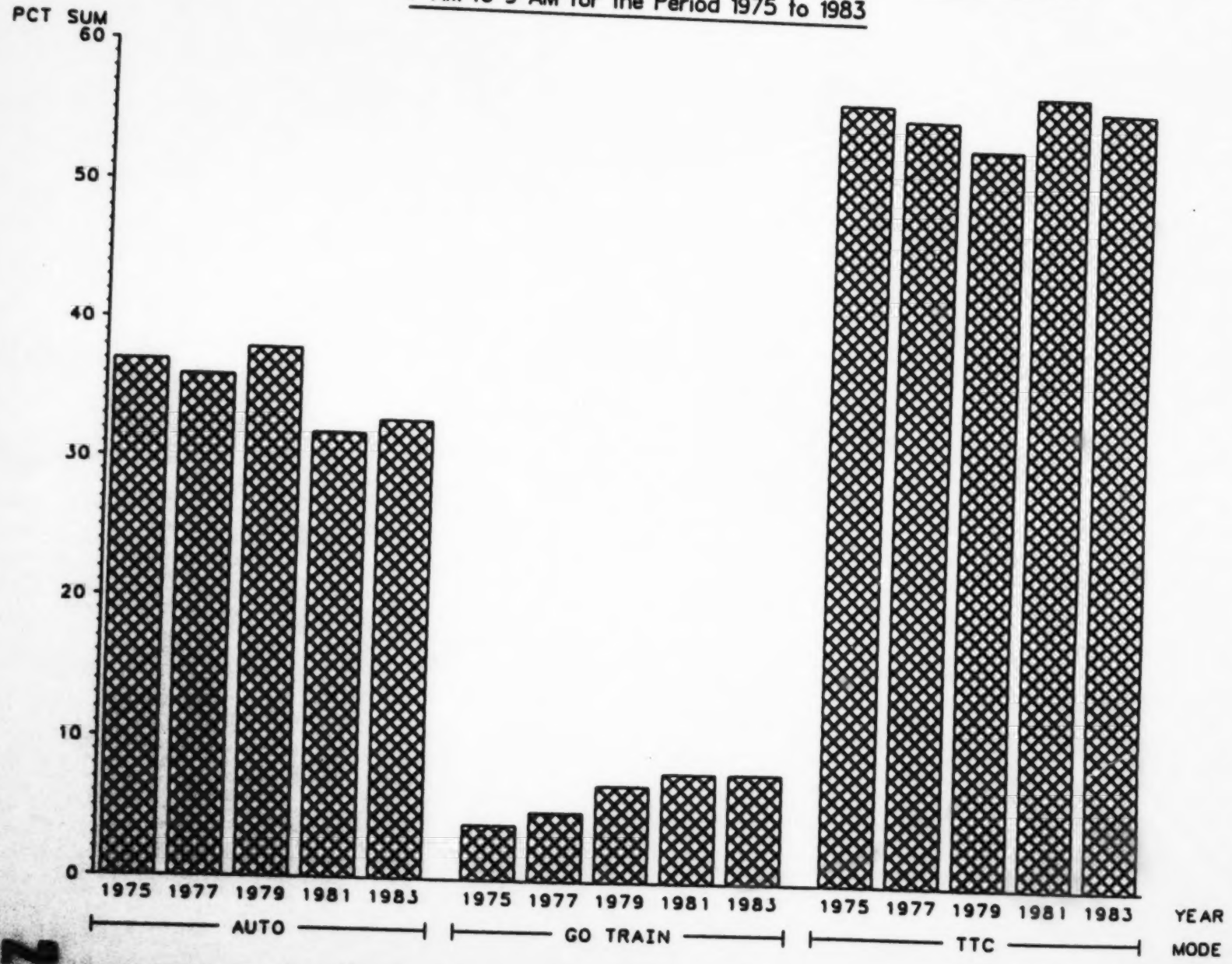
Modal Split for Person Trips Entering the Central Area Cordon

7 AM to 9 AM for the Period 1975 to 1983



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whether or not the long-term trend towards transit is re-establishing itself.

Cordon count and employment data reveal two trends that, in part, account for the 1975-81 shift to transit and, in the future, these trends could continue to encourage further transit ridership gains. The first trend is the steady increase in GO transit, much of which has been from the outlying regions, particularly Peel, where strong population growth is expected to continue in future years. Second, and to a lesser extent, has been an increase in the proportion of Central Area employment in the more transit-oriented office sector and the dominance of the office sector is expected to continue growing. However, for transit to take advantage of these trends, the capacity of the regional GO-transit system will need to be expanded in line with anticipated increases in demand and the TTC's rapid transit system will need to be enhanced in order to maintain attractive commuter services to the areas of Central Area office employment growth.

3. Possible Methods to Influence Modal Split

3.1 Introduction

In preparing this report a wide range of literature regarding methods to influence modal choice and to limit peak-period congestion on roads has been reviewed. Not all these methods are relevant to City Council's current concerns regarding future modal split in the Central Area. Consequently, this report focusses attention on methods which directly limit peak-period auto commuting and result in higher transit use.

In its analysis of the long-term transportation needs for the Central Area, planning staff have already looked at two important factors which will not be considered further in this report:

3.1.1 Pro-Transit Policies

It has been assumed that, in the long-term, major transit improvements will be made to the Central Area and that these improvements will precede and exceed capacity increases to the road system. As a result, it is believed that there will be sufficient transit capacity (TTC and GO) to promote and accommodate the anticipated 5% shift in peak-hour automobile commuting. Other pro-transit policies could be encouraged (e.g. minimizing fare increases, fare integration and transit priority measures on streets) to help ensure the 5% shift is achieved. However, it is felt that once the auto's share of Central Area peak-period commuting falls by 5% to 16% for office employees, it will be difficult to induce further reductions. For example, estimates suggest that, at the present modal share of 21%, there

are a number of auto commuters who use this mode by "choice", but at a projected future level of 16%, only relatively "essential" auto commuters will remain. In this context, an essential auto commuter is a Central Area office employee who has no rasonable transit alternative for the work trip and/or requires a car as a condition of employment or makes regular off-peak use of a car in the Central Area.

3.1.2 Staggered Hours and Flexible Work Weeks

These methods reduce peak-period trip volumes but may have little direct effect on the modal split. In forecasting future peak-hour Central Area traffic volumes, allowance was made for an estimated reduction in the percentage of future office employees arriving at work during the peak-hour from the present level of 65% to 62%.

3.1.3 Carpooling and Ride Sharing

Although the future forecasts of Central Area traffic volumes did not include consideration of carpooling and ride sharing, the achievement of higher auto occupancy rates could lead to a reduction in peak-period auto volumes. Such changes might have a marginal impact on the overall modal split of peak-period passengers. However, there seems to be general agreement in the literature that methods to increase car occupancy rates will have little impact on peak-period congestion problems. Consequently, these methods are not considered further in this report.

In light of the preceding discussion, there appear to be two principal methods of influencing the modal split through direct controls aimed at the auto commuter. These can generally be described as methods relating to "Restriction of Access" and "Pricing and Regulatory Mechanisms".

3.2 Restriction of Access

Auto access to certain parts of the urban area can be restricted by physical means, such as full or partial road closings. In certain areas, the objective may be to limit through traffic by the creation of traffic cells which limit zone crossings within a defined area. In other cases, a complete ban on all but essential vehicles may be sought through the establishment of auto-free zones.

Adopting such measures to reduce the supply of local road space could retard the growth of commuting into the Central Area. However, in the Central Area, the more critical problem is seen to be one of controlling the growth in automobile commuting on the regional road system, not local Downtown streets. It is critical congestion points on the regional road system which impose the

major constraints on peak-period auto access to the Central Area. Yet, even in considering the Downtown Street System, it has proven difficult to reach agreement between the City and Metro levels of government over local traffic control schemes -- as evidenced by the failure, to date, to implement the recommendations of the "Central Area Traffic Management Study".

Methods of physical restraint are open to the general objection that they reduce automobile traffic by reducing capacity and they are not likely to reduce congestion. Such restrictions may simply intensify congestion problems in other areas.

3.3 Pricing and Regulatory Mechanisms

These methods can be applied to both the use of roads and parking spaces. Pricing and regulatory controls can be made to vary by time, place and level of auto occupancy. Basically, four such types of controls can be applied to roads, as discussed below:

3.3.1 Permits

Area permit schemes can be introduced to restrict entry into a defined area to vehicles with a permit which must be applied for and granted by the appropriate authority. However, there are obvious administrative difficulties in deciding who should be allowed a permit and in preventing abuses of the system.

3.3.2 Licences

Area licences overcome the selection problems associated with permits by selling the licences at a set fee on a daily, monthly or annual basis. Singapore, for example, has such a daily licencing scheme in the Downtown. Special classes of road users (e.g. local residents, disabled drivers) can be issued free licences.

3.3.3 Tolls

Tollgates can be used to impose vehicle charges and discourage traffic from entering certain areas of a city or using particularly congested road facilities such as bridges or expressways. A toll system is perhaps most effective in cities where there are few access points to the centre (e.g. New York, San Francisco) requiring correspondingly few toll points. However, in any major application, many toll booths with a large number of collectors would be required to process high vehicle volumes without undue congestion and delay.

3.3.4 Metering

Vehicle metering schemes (with off- or on-vehicle powered metering devices) provide the greatest flexibility for charging vehicles according to the level of congestion they impose upon other road users. This is the pricing technique most strongly advocated by economists on theoretical grounds. However, the practicality of such schemes remains questionable since each vehicle entering the metered zones requires to have some form of special identification fitted to it for electrical surveillance. The technological capability to introduce such electrical road pricing (ERP) measures exists and a demonstration project is currently underway in Hong Kong, which happens conveniently to be an island with a stable and manageable car population.

To varying degrees, all four road control measures described above have the following associated problems: (i) fairness and public acceptability; (ii) boundary problems, such as the trade disadvantages to merchants located in the control area, and (iii) traffic diversion to other areas or road facilities beyond the control limits. In the current Metropolitan Toronto context, it appears unlikely that any of these road pricing and regulatory mechanisms would prove acceptable means by which to control peak-period automobile commuting to the Central Area. However, public opinion might become more receptive to such mechanisms in circumstances of worsening traffic congestion.

In considering the application of pricing and regulatory mechanisms to parking, three basic forms of control can be identified.

3.3.5 Limiting the Supply of Parking

Land use planning controls can be applied to regulate the rate at which off-street parking is provided. For example, the City of Toronto, by adopting the recommendations of the Central Area Parking and Loading Study (CAPLS), amended the City's Zoning By-law to impose maximum limits on the amount of off-street parking that can be provided in association with certain land uses, including office development. The CAPLS parking standards are specifically designed to limit the future growth in the supply of parking and the minimum parking requirements reflect the level of supply required to meet the needs of "essential" auto users as defined in the study. Such a strategy is intended to control the growth of peak-period commuting into the Central Area and contain

congestion on the roads to within acceptable limits while, at the same time, encouraging greater transit use.

3.3.6 Regulating the Use of Parking

The use of existing parking spaces, both on and off-street, can be controlled by various regulatory methods. For example, time limits can be placed on the use of on-street parking spaces to discourage all-day parkers or peak-period parkers from using these parking facilities. Access to off-street parking lots can be similarly controlled by, for example, keeping the entrances to lots and garages closed until after the morning rush-hour and thereby limiting use to off-peak parkers.

3.3.7 Price Controls

The price or rate structures for both off-street and on-street parking can influence the manner in which these facilities are utilized. Most on-street parking spaces in busy areas are priced by meters in such a way as to encourage short-stay users and to make it inconvenient or expensive to use such spaces for all-day, commuter parking. Similarly, the rate structures in off-street lots and garages can be designed to encourage use by one type of parker over another at different times of the day. For example, reduced charges during the peak-period for vehicles with passengers may encourage higher auto occupancy rates, and charging only hourly rates (without a maximum) during the daytime may discourage all-day parkers. Variable hourly rates could impose higher costs for peak-period users.

The various parking controls described above are all in use to some degree in numerous cities. However, the effectiveness of certain of these measures can be limited by problems of enforcement and the extent to which they can be applied comprehensively on an area-wide basis. A major consideration in relation to this latter point, and one which applies in the City of Toronto, is the fact that much of the off-street commercial parking supply in many cities is privately-owned and operated. Under these circumstances, it can prove difficult for local public authorities to impose controls on the use of the private supply of parking.

Generally, private off-street parking may be available to the public at rates and on terms dictated by the owner or operator, or may be reserved for special user groups. A further consideration is that parking controls have an impact at the destination end of the trip and, although such controls may influence the number of inbound trips, they may have little impact on the number of trips passing through the parking control area. Indeed, limiting

inbound traffic may, to some extent, free-up road capacity for more through trips.

4. Conclusions

At past rates of growth and under certain assumptions regarding trip generation rates and modal split, there is sufficient office development potential within the Central Area (including the Railway Lands) to require future expansion of the capacity of the road and transit system. It has been calculated that with an overall reduction in the peak-hour modal split of Central Area office employees from the estimated present level of 21% to a future level of 16%, major road improvements can be limited to increases in the capacity of the regional road system from the west. The current proposals to extend Front Street and widen the Gardiner Expressway, by one lane in each direction between Strachan Avenue and the Humber River, are being studied as possible means by which to achieve such increased capacity and there may also prove to be other options. At a future modal split for office commuters of 16%, only relatively "essential" auto commuters will remain and further reductions in the auto's share of peak-hour trips is not considered realistic. However, concern has been expressed that the 16% modal split target may prove difficult enough to attain and that additional measures, beyond those envisaged to date, should be considered to see if there are further means of ensuring that this target will be achieved and the need for major road improvements kept to a minimum.

This report has looked at two basic types of methods by which to influence modal choice and limit peak-period road congestion. One set of methods relates to the physical restriction of auto access to certain parts of the urban area or its road system. Generally, these methods reduce road capacity and often produce the result of shifting and intensifying congestion problems in other areas. Consequently, it is not recommended that these methods be pursued as a means of addressing the modal split issue upon which this report is focussed.

The other set of methods relates to pricing and regulatory mechanisms which can be applied to control the use of both parking and road space. For reasons outlined in this report, it is not considered that these measures, as directed at controlling the use of roads, will prove acceptable in the current Metropolitan Toronto context. However, a number of pricing and regulatory controls on the use of parking are already being applied to various degrees in many cities, including Metropolitan Toronto, and there appears to be some merit in studying the possible further extension of these controls to parking in the Central Area.

By extending its control over the use and price of parking, the City could introduce measures to discourage peak period auto commuting. A less specific approach might be to impose a Central Area parking tax to discourage all motorists coming into the Downtown. Funds from such a tax could be put to transportation or other purposes. However, it is not the objective of this report to produce, at this time, a definitive set of recommended parking controls for the Central Area.

Further study is needed to assess the appropriateness of various options and the different conditions under which their application would be warranted. To be effective, the City would need to extend its powers to control or tax private parking facilities and enabling legislation would be required from the Province. A request by the City for a similar extension of power some ten years ago failed at Queen's Park but a well-supported proposal might gain future acceptance.

Any effective proposal to encourage peak-period commuters to shift from auto to transit requires that transit be maintained as an effective alternative. The recent Metro/TTC report entitled "Network 2011" (May, 1985) includes a proposed schedule for additional TTC services to the Central Area. This report suggests that the Harbourfront/Spadina LRT line should be built by 1989 along with the implementation of such other short-term measures as the proposed Sherbourne Street express bus and improvements to the Bloor/Yonge subway station.

These additional TTC facilities are expected to support the growth of the Central Area until the late 1990's, by which time the proposed "Relief Line" is said to be required. It is also anticipated that throughout this period, till the end of the century, it will be possible to incrementally expand the capacity of GO-rail services to Union Station in balance with projected increases in demand. As the Metro/TTC study concludes, it will be important to monitor the use of the Central Area transportation system in relation to office development growth in the area. In addition, attention will need to be paid to the phasing of Central Area road and transit capacity increases to ensure that modal split objectives are being supported.

Finally, it should be noted that the conclusions of this report are based upon the assumptions used in the analysis of future long-term transportation needs for the Central Area, as reported in the Railway Lands "Development Concept" report of September, 1983. Of these assumptions, perhaps the most important relate to the assumed levels of employment growth, upon which the need for and timing of Central Area transportation improvements are most critically dependent.

During the public discussions of the Railway Land proposals, concerns were raised over the wide range to be found in recent employment projections for the Central Area and the resulting level of confidence that can be placed in the subsequent estimates of future requirements for increased transportation capacity. For example, Central Area employment has only recently recovered to 1981 levels following an unexpected decline over the 1981-3 period, and 13% of total Central Area office space now stands vacant. In reviewing the "Network 2011" report and in preparing the next five-year review of the Central Area Plan, City planning staff will be undertaking a detailed re-evaluation of projected employment growth in the Central Area and the implications for future changes to the transportation system.

Recommendation:

That City Council authorize staff of the Planning and Development Department, in consultation with the Department of Public Works, to prepare terms of reference and cost estimates for a consultant study of possible means by which to control, through pricing and regulatory mechanisms, the use of Central Area parking facilities to support the achievement of the long-term modal split objectives as described in this report.

Stephen G. McLaughlin,
Commissioner.

GS/fs